Operating Instructions
Linotronic phototypesetting machine

Mergenthaler Linotype GmbH:
D 6236 Eschborn near Frankfurt/Main – W-Germany

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Introduction

This manual is intended as a guide to the Linotronic operator in his training course and to serve as a reminder when using the machine. The principles of phototypesetting and the characteristics and functions of film and photographic paper are fully described in relevant literature available from manufacturers. This manual therefore is limited to the functions of the Linotronic machine. As the Linotronic needs only a minimum of maintenance and because the user basically need look only after cleanliness of the fonts and the machine, technical functions of the machine have been discussed only briefly. The main operating aspects of inputting commands and setting the photo unit, on the other hand, have been discussed in detail. In most cases where command functions are involved, three examples have been given which explain the keyboarding sequences in detail. The end pages of this manual show some exercises ranging from simple composition to somewhat complicated tabular matter. Several tables have been provided to permit reference to preparing work. In practical operation it may be advisable to set up some of these tables and have them ready for reference when working. Kerning and set-width reference tables for the most popular typefaces are being prepared. The best aid in checking machine functions is provided by the display screen (VDU). All set-width and film transport movements can be seen from the line remainder value or the XY coordinate positions so that it is possible to check what will happen during exposure. It is also easy to avoid errors in operation by checking the screen and making text exposures before commencing the actual setting. It is recommended to set some complicated text matter to ensure a reliable check, or to set complicated tabular or formulae when such work is involved.
This manual will be supplemented as soon as the additional machine functions, such as Floppy Disc, Linomat, etc, become available.

Technical details of the Linotronic:

Input	Manually via contactless standard typewriter keyboard layout with 60 keys for characters and 55 command keys (30 of these are illuminated)
Input speed	Unlimited
Setting	Justified or semi-automatic
Measuring systems	Millimetre, Didot, Pica, Inch (selected by keys)
Input store	Ring store with 1024 characters
Video Display screen	18 x 12 cm (9″ = 23 cm diagonally) with analog indicator for the line remainder (a moving light beam). 128 different characters and symbols on a 7 x 12 dot matrix Character size about 14 pt Capacity 8 lines of 32 characters each, of which 4 lines for text 4 lines for digital display of: column number, line counter, actual word space, line length remainder, type size, film advance, indent, caps or lower case indication, coordinates values, key to call up input values for typesetting commands
Light source	Xenon flash lamp with program-controlled light density depending on type size
Image Master	Stable film strips (fonts) holding 105 characters each, compatible with Linocomp
Typeface Capacity	8 typefaces
Typeface size range	4-48 pt in ½ pt increments a total of 89 sizes
Mixing	All typefaces, sizes and set widths can be mixed within a line
Height	Max. 325 mm/72 Didot ems/77 pica ems/13″
Line length	Max. 305 mm/67 Didot ems/72 pica ems/ 12″; in steps of 0.01 mm/¼ pt or 0.001″
Tabulation	25 different column widths
Film advance	Max. 325 mm/72 Didot ems/77 pica ems/13″ in steps of 0.01 mm/¼ pt/0.001″
Electronics	Programmed microprocessor (programstore in ROM), semiconductor store for current typesetting data

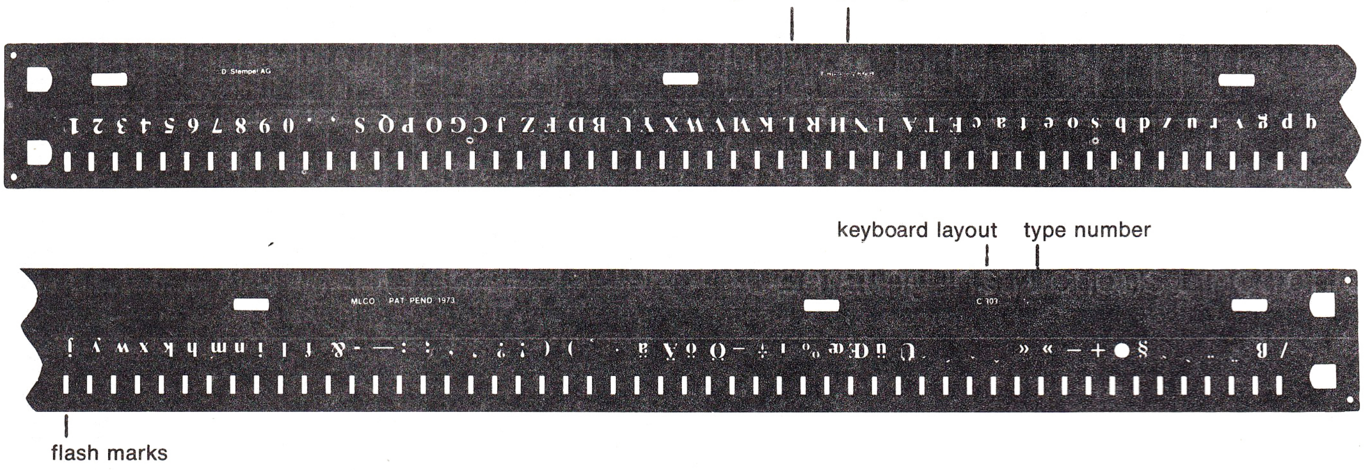
Electronics	Programmed microprocessor (programstore in ROM), semiconductor store for current typesetting data	
Drive	For type size, line build-up and film advance are controlled by speed-regulated DC servos cover recirculating ball drives or precision gearboxes supervised by a mini-controller (TTL system)	
Cassette	Multi-format cassette for sheet film or photographic paper	
Phototypesetting material	Sheet film or photographic paper in all sizes up to DIN A7, landscape or upright up to 305 mm wide and 350 mm deep (67 x 77 Didot ems/72 x 82 pica ems/12″ x 14″)	
Product	Right reading or reverse reading (via reversing prism)	
Power supply	Single-phase AC 220 V, 50/60 cycles (± 10 per cent)	
Power requirement	800 VA	
Room temperature	18°–27° Centigrade	
Air humidity	35–85 RH, free from condensation	
Dimensions	Keyboard unit 1010 mm high 42.5″ hight 820 mm wide 32.3″ wide 700 mm deep 28″ deep	Photo unit 820 mm high 32.3″ high 850 mm wide 34″ 700 mm deep 28″ deep
Weight (approx)	130 kgs 260 lbs	280 kgs 560 lbs
Options and auxiliary units (to become available)	Linomat analog-digital position-indication and inputting device Data storage of input text and typesetting parameters by magnetic disc with a capacity of more than ½-million characters net Correction functions in conjunction with magnetic store and search routine Display of special characters on display screen Exposure of rules by point light source	

The Linotronic font

The Linotronic font is a stable film strip containing 105 characters in 8 pt size. Each font carries only type face, that is a roman or a bold or an italic, etc. One side of the font carries the flash mark corresponding to each character which governs the precise moment of exposure. Two holding bars are fitted to the font; and there are several register holes. Because of the arrangement of the holding bars and the register holes, the font can be fitted in its correct position on the drum. Care should be taken in handling the font, which should be held only by the edges. Fonts taken from the machine should be stored safely and free from dust.

Font layouts vary. For this reason the characters on the keys of the keyboard correspond only to English language layouts with the characters displayed on the screen or being exposed. Even in English, certain typefaces in italic or bold will vary from standard layout. The layout is indicated by a number on the font. Matching keyboard layouts carrying the same number are available. The diagrams here show the keyboard and font layouts. When setting typefaces or special characters which do not correspond to the standard layout C 101, the relevant keyboard layouts are needed. Each font can also be identified by a mark which helps to avoid mistakes should typefaces appear very similar or where layouts are similar. The font also indicates the design size. The most widely used design sizes are 8 and 12 pt. The indicator mark does not refer to the size of the type on the font or the sizes to which the font can be exposed. It indicates only which size was used in drawing and manufacturing the font in the design stage. This means that any size from 4–48 pt can be exposed from any font. The design size affects the widths of characters in different sizes. A typeface having a 12 pt design size will always set closer than the same typeface in an 8 pt design size. It is possible to vary widths by the input of kerning or spacing values. The font is sub-divided into three plaques. Each plaque is manufactured as one unit. If special characters are required, it is more economical to limit special font requirements to one plaque.

The Linotronic font shown in actual size (but divided into two in order to show in this space)



font layout for English-speaking countries

Plaque 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	2	3	4	5	6	7	8	9	0	.	,	S	Q	P	O	G	C	J	Z	F	D	B	U	Y	X	W	V	M	K	L	R	H	N	I	A	T	E	c	a

Plaque 2

41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
t	e	o	s	b	d	z	u	r	v	g	p	q	j	y	w	x	k	h	m	n	i	l	f	&	- DIV	— EM	:	;	‘	’	?	!	(	)

Plaque 3

76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
+ § +	— ¶ —	× † ×	= ‡ =	* ★ *	¢ · ¢	@ ✓ @	# □ #	ı	%	ﬁ	ﬂ	⅓ ° ⅓	⅔ ′ ⅔	EN ″ EN	EN EN EN	[	]	÷ ‖ ÷	● ■ ●	½ © ½	¼ ® ¼	¾ ™ ¾	/	⅛ ➧ ⅛	⅜ ◀ ⅜	⅝ ★ ⅝	⅞ ☆ ⅞	$	£

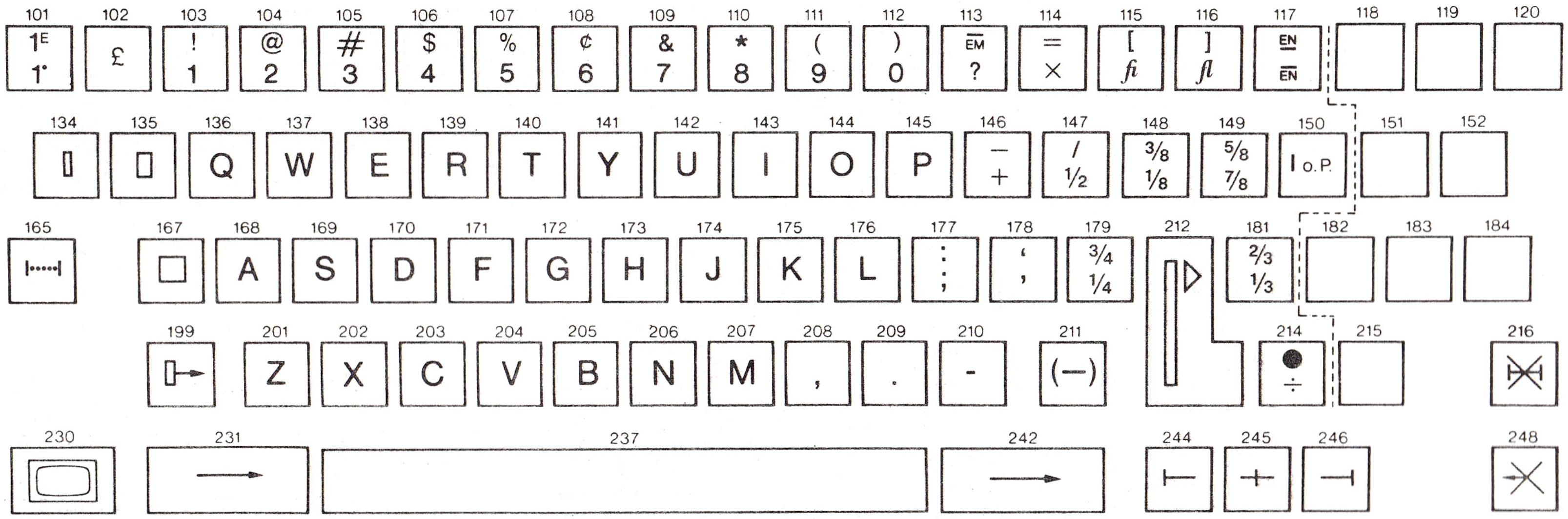
C 101 normal · roman · romain
C 102 kursiv · italic · italique
C 103 halbfett · bold · demi-gras

Linotronic® Standardfont für englischsprachige Länder

Mergenthaler Linotype GmbH · Eschborn bei Frankfurt

Standard font for English speaking countries · Font standard pour pays de langue anglaise

Layout C 101-1


101 1E 1·
102 £
103 ! 1
104 @ 2
105 # 3
106 $ 4
107 % 5
108 ¢ 6
109 & 7
110 * 8
111 (9
112) 0
113 EM ?
114 = ×
115 [fi
116] fl
117 EN EN
118
119
120
134
135
136 Q
137 W
138 E
139 R
140 T
141 Y
142 U
143 I
144 O
145 P
146 – +
147 / ½
148 ⅜ ⅛
149 ⅝ ⅞
150 I o.P.
151
152
165
167 □
168 A
169 S
170 D
171 F
172 G
173 H
174 J
175 K
176 L
177 : ;
178 ‘ ’
179 ¾ ¼
212
181 ⅔ ⅓
182
183
184
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201 Z
202 X
203 C
204 V
205 B
206 N
207 M
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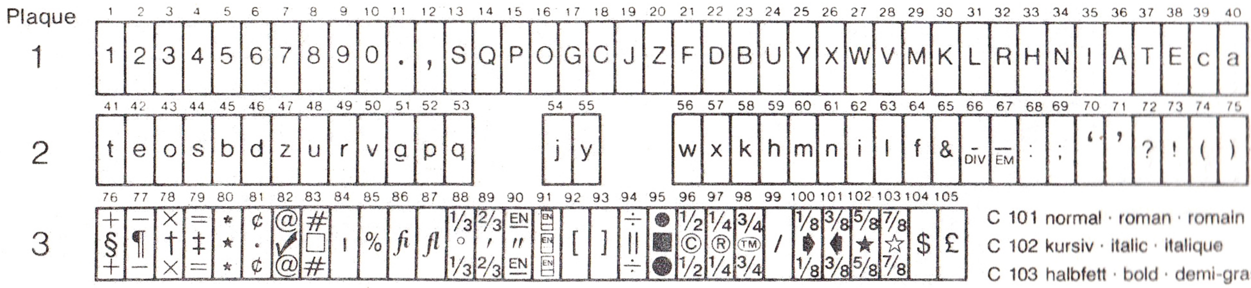
Fontbelegung


Plaque
1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
1 2 3 4 5 6 7 8 9 0 . , S Q P O G C J Z F D B U Y X W V M K L R H N I A T E c a
2
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75
t e o s b d z u r v g p q j y w x k h m n i l f & DIV EM : ; ‘ ’ ? ! ( )
3
76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105
+ § + – ¶ – × † × = ‡ = * * * ¢ . ¢ @ ✓ @ # □ # ı % fi fl ⅓ ⅓ ⅔ ⅔ EN EN [ ] ÷ ÷ ● ■ ● ½ © ½ ¼ ® ¼ ¾ ™ ¾ / ⅛ ⅛ ⅜ ⅜ ⅝ ★ ⅝ ⅞ ☆ ⅞ $ £

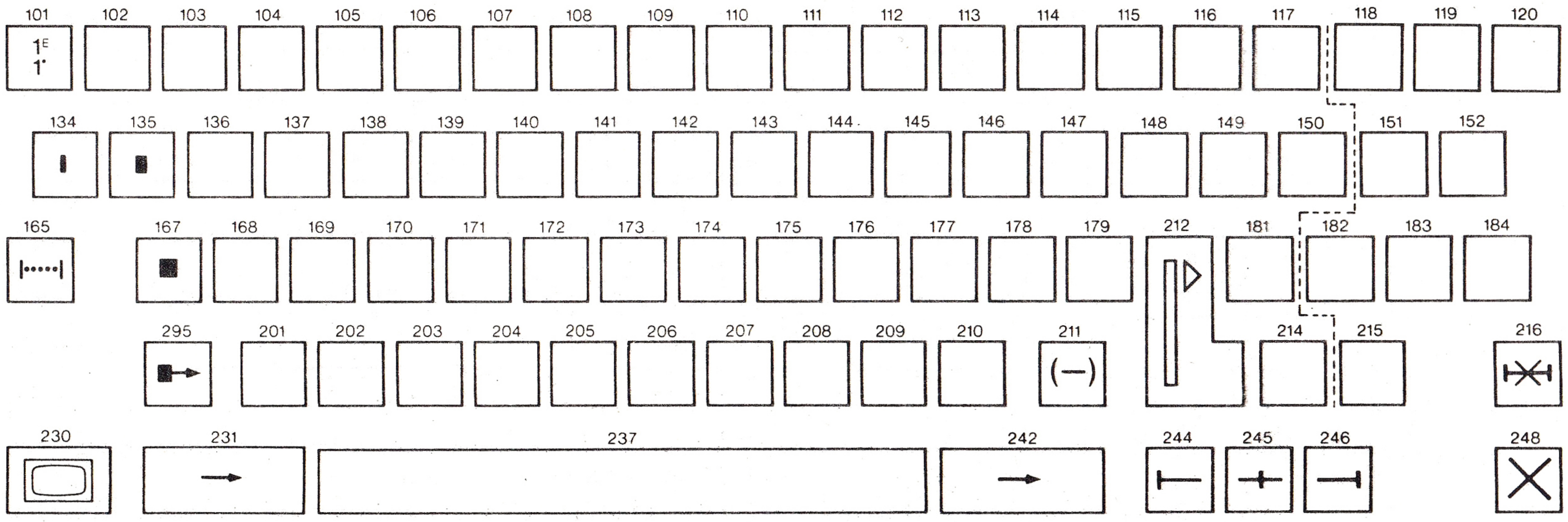
C 101 normal · roman · romain
C 102 kursiv · italic · italique
C 103 halbfett · bold · demi-gras

Änderungen vorbehalten
Stand 3. 1. 1977

Linotronic® Blankolayout für Sonderfonts

Blanc layout for special fonts · Layout en blanc pour fonts spéciaux

Layout C


101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120
1E
1·
134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152
165 167 168 169 170 171 172 173 174 175 176 177 178 179 212 181 182 183 184
295 201 202 203 204 205 206 207 208 209 210 211 214 215 216
(–)
230 231 237 242 244 245 246 248

Fontbelegung

Plaque	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	1	2	3	4	5	6	7	8	9	0	.	,	S	Q	P	O	G	C	J	Z	F	D	B	U	Y	X	W	V	M	K	L	R	H	N	I	A	T	E	c	a

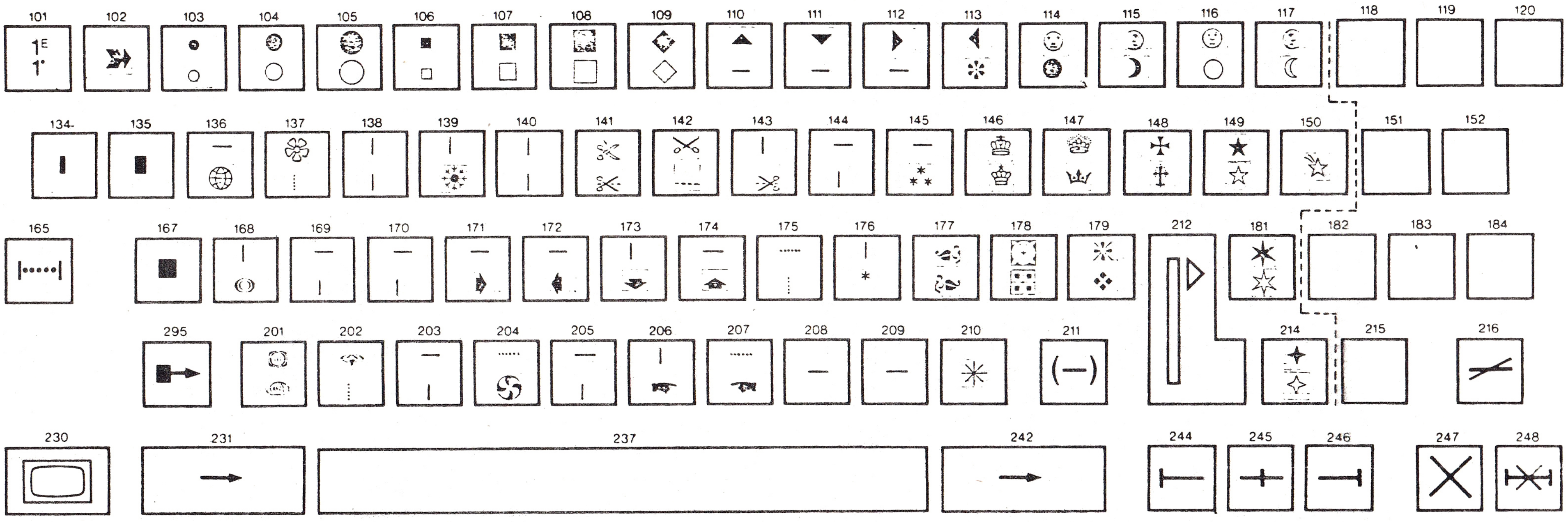
Plaque	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74 ·	75
2	t	e	o	s	b	d	z	u	r	v	g	p	q	j	y	w	x	k	h	m	n	i	l	f	&	DIV	EM	:	;	‘	’	?	!	(	)

Plaque	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	
3	,	⊡	ä	Ä	ö	Ö	EN	†	1	%	œ	Œ	ü	Ü	·	´	˄	ˆ	«	»	–	+	✱	§	.	`	¨	¨	ß	/	C
																															C
																															C

normal · roman · romain
kursiv · italic · italique
halbfett · bold · demi-gras

Linotronic® Linienfont

Layout Nr. C1210


101
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Fontbelegung

Plaque	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	0	.	,	S	Q	P	O	G	C	J	Z
								—	—	—	—	—	—	—	—	—	—	—	—	

Plaque	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	33	39	40
1	F	D	B	U	Y	X	W	V	M	K	L	R	H	N	I	A	T	E	c	a
	—	—	—					····	····	····	|	|	|	|	|	|	|	|	|	

Plaque	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
2	t	e	o	s	b	d	z	u	r	v	g	p	q	j	y
	|	|	|	|	|	|									

Plaque	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
2	w	x	k	h	m	n	i	l	f	&	DIV	EM	:	;	‘	’	?	!	(	)
	⋮	⋮	⋮																	

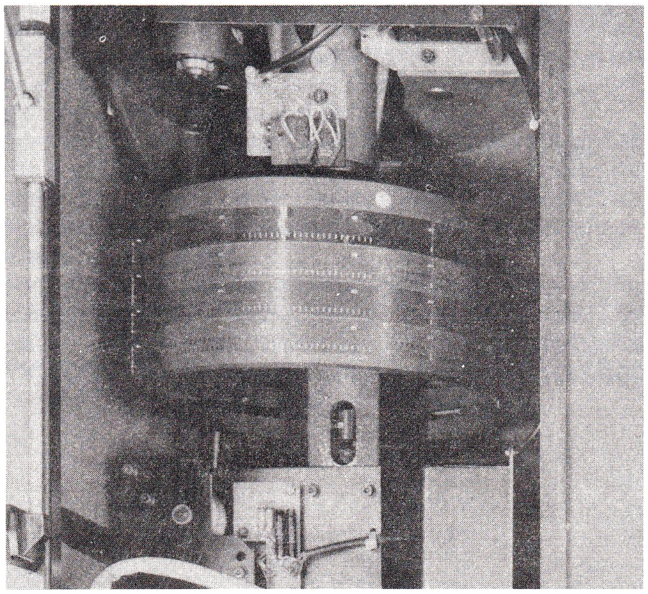
Plaque	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
3	,	⊡	ä	Ä	ö	Ö	EN	†	1	%	œ	Œ	ü	Ü	·

Plaque	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
3	´	ˆ	ˆ	«	»	–	+	★	§	.	`	..	¨	ß	/

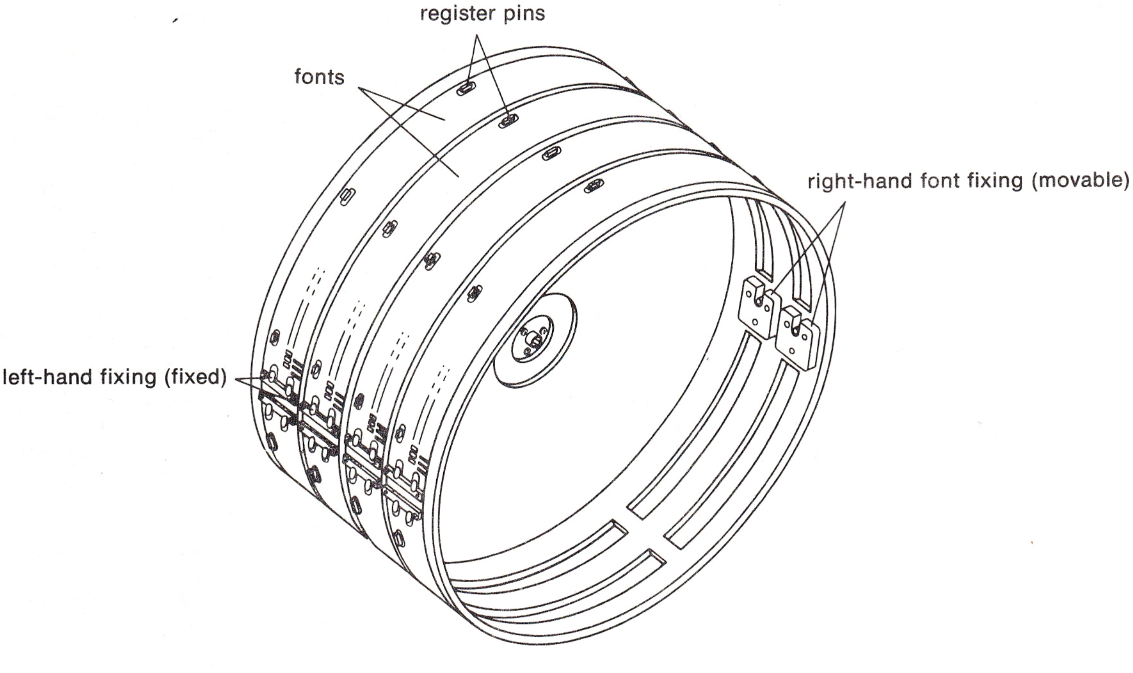
The font drum

The font drum holds up to 8 different fonts. The drum is located below the left hand cover of the photo unit. The drum has four planes to hold two fonts each. Correct positioning of the fonts on the drum is found by referring to the guide number 1 and 2, or 7 and 8. Font positions 1, 3, 5 and 7 and 2, 4, 6, and 8 are arranged in line one behind each other. Positioning the fonts on the drum is as follows: the font is placed over the hooks in the corresponding position on the left side of the drum, the drum is then slowly turned anticlockwise and the font is carefully and accurately positioned over the register pins and clipped over the spring loaded clip by holding the drum steady with the left hand and pushing the block with the clip on the inside of the drum to the left with the right hand. There is no need for the drum to be fully loaded with fonts, but there should always be two fonts on one plane, so that the drum is loaded with 2, 4, 6 or 8 fonts. During operation the drum turns at regular speed. Selection of characters is by scanning the flash marks. A photo diode counts the flash marks starting from an initial mark during every drum revolution and in this way locates the character to be exposed. The reflection strip on the drum under the flashmarks must be kept clean as even one flash mark which does not reflect accurately will bring confusion into all subsequent character exposures. At the same time as the mark is located, exposure by the xenon lamp is effected.

Changing from one drum plane to another is by a horizontal movement of the whole drum by a servo motor. All 8 fonts may be mixed within one line. The rule font (keyboard layout C1210) must be placed in position 7 as it is automatically brought into operation.



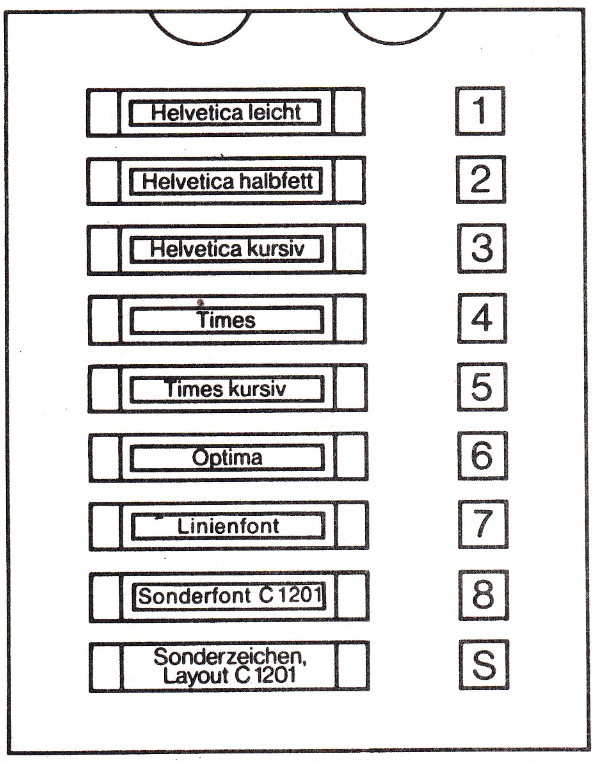
The Linotronic font drum

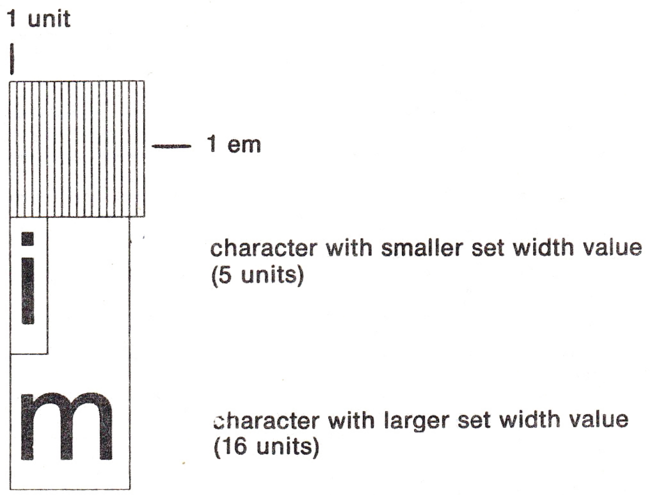


The width plug

The width plug is plugged in on the left hand side of the keyboard into one of the 8 positions provided. A groove in the plug prevents incorrect insertion. The position of a width plug must correspond to the font position on the drum. Thus, if Helvetica roman has been clamped on to font position 3, then the width plug for Helvetica roman must also be plugged into position 3. A ninth plug position is provided for the display of special characters on the display screen. This is only possible if the special font is mounted on drum position 8. The display screen width plug makes it possible to show special characters, such as Greek, Cyrillic or mathematical symbols on the display screen. The display screen width plug is available as an extra with special fonts. The width plug itself must go into position 8. If no special display screen width plug is used, special fonts can be used in other positions, too. After changing a width or display screen width plug, reset or restart commands must be given.

The calculation of set-widths is by an 18-unit system. One em is sub-divided into 18 relative units. Each character in the font has a certain number of these 18 units (from 4–18 units). The fixed values of 1 unit, thin, en and em are also calculated on the 18 unit system. In this system the en is always based on the figures in a typeface. In most typefaces figures and the en have a value of 10 units, while the thins, the full stop and the comma have 5 units. In certain narrow typefaces figures and ens have 9 units, while the thins and full stop and comma have 6 units.
Set-width values are shown in the width tables supplied with every typeface. It is also possible to use the line length remainder indicator on the display screen to check that set width values of ens and thins correspond to certain figures or punctuation marks.
It is important to use the relevant width plugs when setting from fonts having different design sizes or layouts. The width plug applies to all type sizes. If there is no width plug in the corresponding position, the Linotronic will calculate 10 units (1 em quad) for each width value.




1 unit
1 em
i
m
character with smaller set width value (5 units)
character with larger set width value (16 units)

On the following page a Linotronic/Linocomp set width chart is shown. Two width values are given for each character. The first figure (18–E) refers to the production of the width plug. The second figure (units) corresponds to the value used in the machine to claculate set widths.

Linotronic/Linocomp set width list

Nr. 114

Type: 12 pt Sabon italic

Layout **C** 302

Pos	18 – E	Units	character
0			
1	8	10	1
2	8	10	2
3	8	10	3
4	8	10	4
5	8	10	5
6	8	10	6
7	8	10	7
8	8	10	8
9	8	10	9
10	8	10	0
11	13	5	.
12	13	5	,
13	9	9	S
14	2	16	Q
15	7	11	P
16	2	16	O
17	3	15	G
18	5	13	C
19	11	7	J
20	5	13	Z
21	8	10	F
22	3	15	D
23	6	12	B
24	4	14	U
25	6	12	Y
26	4	14	X
27	0	18	W
28	5	13	V
29	1	17	M
30	5	13	K
31	6	12	L
32	5	13	R
33	3	15	H
34	3	15	N
35	11	7	I
36	5	13	A
37	6	12	T
38	6	12	E
39	10	8	c
40	9	9	a

Pos	18 – E	Units	character
41	12	6	t
42	10	8	e
43	8	10	o
44	11	7	s
45	8	10	b
46	8	10	d
47	10	8	z
48	8	10	u
49	11	7	r
50	9	9	v
51	9	9	g
52	8	10	p
53	8	10	q
54	13	5	j
55	9	9	y
56	4	14	w
57	8	10	x
58	8	10	k
59	8	10	h
60	3	15	m
61	8	10	n
62	13	5	i
63	13	5	l
64	12	6	f
65	1	17	&
66	12	6	-
67	0	18	–
68	12	6	:
69	12	6	;
70	13	5	‘
71	13	5	’
72	10	8	?
73	12	6	!
74	12	6	(
75	12	6	)

Pos	18 – E	Units	character
76	15	0	¸
77	13	5	· P.a.M
78	9	9	ä
79	5	13	Ä
80	8	10	ö
81	2	16	Ö
82	9	9	–
83	8	10	†
84	13	5	ı ohne P.
85	0	18	%
86	4	14	œ
87	0	18	Œ
88	8	10	ü
89	4	14	Ü
90	15	0	´ gem.
91	15	0	´ vers.
92	15	0	^ gem.
93	15	0	^ vers.
94	8	10	«
95	8	10	»
96	3	15	=
97	3	15	×
98	12	6	°
99	8	10	§
100	15	0	` gem
101	15	0	` vers
102	15	0	¨ gem
103	15	0	¨ vers
104	8	10	73
105	11	7	/ schräg
106	13	5	thin
107	8	10	en
108	0	18	em
109	9	9	en ldr

The four systems of measurement

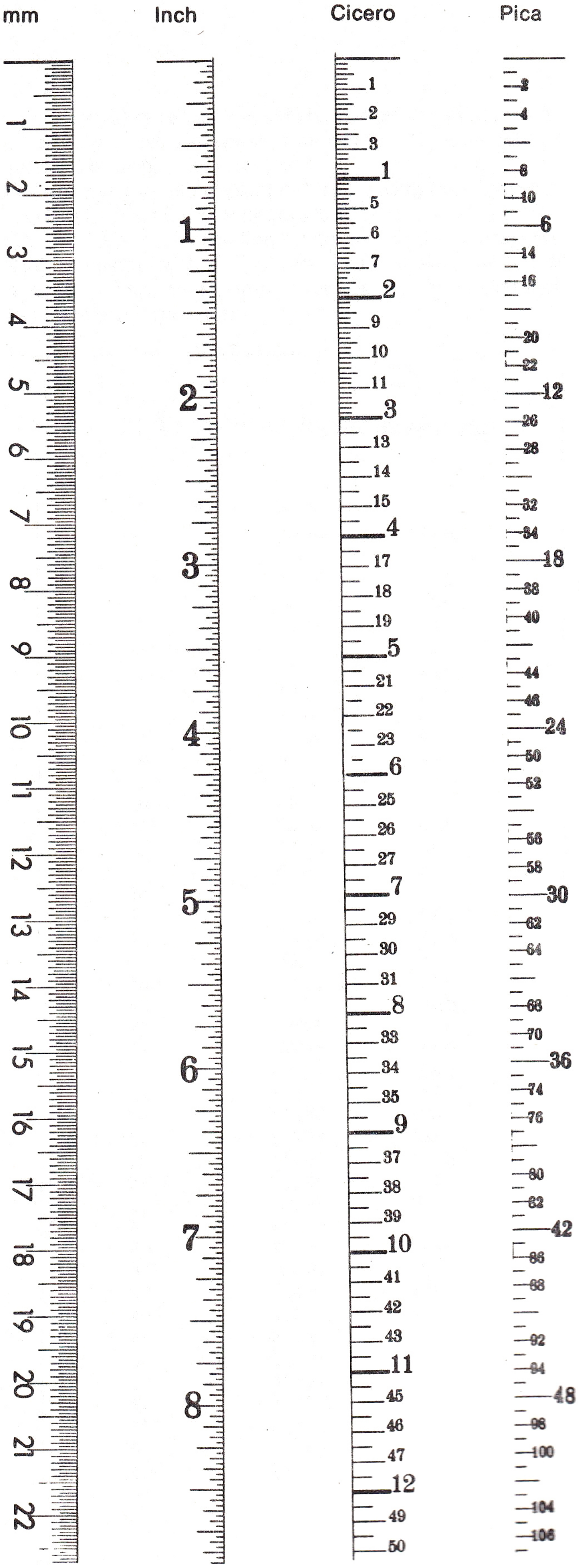
All format instructions can be input in four systems of measurement for instructions regarding, for instance, line length, indents, tabular columns, film advance, coordinate values, etc. The exception is the type size which is input in point sizes between 4–18 pt (there is no need to change the system of measurement here) and the thickness of rules in thicknesses from 1–6. The system of measurement to be used (Millimetre, Didot, Pica, Inch) is pre-selected by key. It is also possible to mix the systems of measurement, so that a format can be input in Didot and points, while indents are input in millimetres. Line length remainder and other command indications automatically convert to the pre-selected system of measurement. The system of measurement in use is also indicated by the appropriate key which will light up. All measurements are converted by the computer to the machine unit system (1 unit = 1/100 mm), to which the periscope mirror controlling the set width control, as well as film transport are geared.

10 mm = 0.394 inch
= 2 Didot ems and 2.75 pts (Didot)
= 2 Picas and 4.5 pts

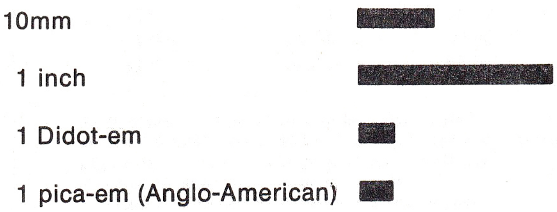
1 inch = 25.39 mm
= 5 Didot ems and 7.75 pts (Didot)
= 6 Picas and 0.25 pt

1 Didot em = 4.51 mm
= 0.178 inch
= 13.00 pts

1 Pica em = 4.21 mm
= 0.166 inch
= 11.25 pt (Didot)



To illustrate the relationship of the measuring system to each other, the table shows the four systems as related, there is no need for laborious and checking any measuring system.



optical comparison of the four systems of measurement in the table.

Didot-point to millimetre conversion table

This conversion table serves to aid the production planner to find the millimetre values for film advance. It is, of course, possible to use the table for conversion of format or indent values. As it is more convenient to use rounded-off values, millimetre values have been listed in three levels of accuracy: hundredths – tenths – and quarters of millimetres. The table shows the values of the type sizes in the Linotronic from 4–48 pt and the main typesetting formats from ½–60 Didot ems. Values not shown are easily determined by adding up several small values. It is also possible to calculate any conversion in all four systems of measurement via the Linotrinic operating unit.

For example: input a format in Didot ems to the Linotronic and then activate the millimetre key. The mm-value will instantly be shown by the line length remainder. When working to the mm-system, it is best to round values off to half or full mm. The same method of conversion can be applied to all measuring systems.

Didot-point-to-millimetre conversion

Didot-point	millimetre		
	0,01 mm	0,1 mm	0,25 mm
4,0	1,50	1,50	1,50
4,5	1,69	1,70	1,75
5,0	1,87	1,90	1,75
5,5	2,06	2,10	2,00
6,0	2,25	2,30	2,25
6,5	2,44	2,40	2,50
7,0	2,63	2,60	2,50
7,5	2,81	2,80	2,75
8,0	3,00	3,00	3,00
8,5	3,19	3,20	3,25
9,0	3,38	3,40	3,50
9,5	3,57	3,60	3,50
10,0	3,75	3,80	3,75
10,5	3,94	3,90	4,00
11,0	4,13	4,10	4,25
12,0	4,51	4,50	4,50
13,0	4,88	4,90	5,00
14,0	5,26	5,30	5,25
15,0	5,63	5,60	5,50
16,0	6,01	6,00	6,00
17,0	6,39	6,40	6,50
18,0	6,76	6,80	6,75
19,0	7,14	7,10	7,25
20,0	7,52	7,50	7,50
22,0	8,27	8,30	8,25
24,0	9,02	9,00	9,00
26,0	9,77	9,80	9,75
28,0	10,52	10,50	10,50
30,0	11,27	11,30	11,25
32,0	12,03	12,00	12,00
34,0	12,78	12,80	12,75
36,0	13,53	13,50	13,50
40,0	15,04	15,00	15,00
44,0	16,54	16,50	16,50
48,0	18,04	18,00	18,00

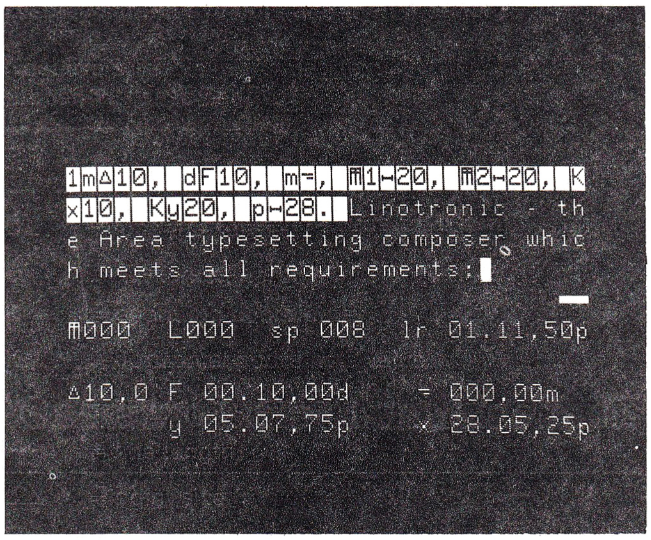
As the conversion from the Didot-point system to millimetre values requires rounding up or down, even when working to a tolerance of hundredth of millimetre, allowance has been made for these rounding-off needs in the tables.
An example for possible conversion errors:
4 Didot-ems = 18.04 mm; 20 Didot-ems = 90.25 mm.
5 x 4 Didot-ems = 20 Didot-ems; 5 x 18.04 mm = 90.2 mm.

Didot-em to millimetre conversion

Didot-em	millimetre	
	0,01 mm	0,5 mm
0,5	2,25	2,0
1	4,51	4,5
2	9,02	9,0
3	13,53	13,5
4	18,04	18,0
5	22,55	22,5
6	27,07	27,0
7	31,58	31,5
8	36,10	36,0
9	40,61	40,5
10	45,12	45,0
11	48,63	48,5
12	54,15	54,0
13	58,66	58,5
14	63,17	63,0
15	67,68	67,5
16	72,20	72,0
17	76,71	76,5
18	81,22	81,0
19	85,73	85,5
20	90,25	90,0
22	99,28	99,5
24	108,30	108,5
26	117,32	117,5
28	126,35	126,5
30	135,38	135,5
32	144,40	144,5
34	153,43	153,5
36	162,45	162,5
38	171,48	171,5
40	180,50	180,5
42	189,53	189,5
44	198,56	198,5
46	207,58	207,5
48	216,61	216,5
50	225,63	225,5
52	234,66	234,5
54	243,68	243,5
56	252,71	252,5
58	261,73	261,5
60	270,76	271,0

The control screen (V.D.U.)

The control screen serves two purposes. It serves as a visual display of the text being set and also indicates the actual operating condition of the machine. The text part of the screen consists of up to 4 lines of 32 characters each = 128 characters. During keyboarding the characters appear from left to right on the fourth line of the screen. Commands keyed in during setting also appear on the screen in the form of negative symbols or characters. As soon as a line on the screen is filled, it moves up to the third line on the screen and pushes any already existing lines up. Once more than four lines have been set, the first of these lines will disappear from the screen. The display screen may be used to cancel individual cancellations or corrections. The "kill line" function applies to set lines (not to lines on the screen). The lines appearing on the screen may not be identical with set lines. The lower four lines on the screen show the various input commands. Between the four upper and lower lines is the line length remainder which is analog in operation. The line length remainder is shown as a light bar on the screen, and gradually diminishes from 1:1 full size by being decreased by the set width value of each character, moving from left to right. Where the typesetting format is larger than the width of the screen, this indication becomes visible only after the line length remainder has become smaller than the width of the screen. The screen is about 150 mm wide (this dimension may vary depending on the tube). The fifth line on the screen indicates, from left to right, the actual number of columns in tabular work (1–25), the number of lines set (line counter), the actual relative word spacing (spaceband value), and a second digital line length remainder indication. This line length remainder indication shows how much space is still available in a line in the corresponding system of measurement to the best possible accuracy. Indication is numeric. The seventh display screen line shows the last type size input, as well as film advance and indents. The eighth line on the screen shows the actual values for X and Y coordinates. The coordinate values follow every set width or film transport movement. The cap "S" indicates when in shift. The empty line (sixth) on the screen is available for recalling any information by pressing key 230. This allows the display of information on setting commands, or to recall data which is shown as a continuous display on the screen. Once the measuring system has been changed by key operation, even during the course of setting a job, the control indications for the X and Y coordinates automatically reset to the new system of measurement. Other indications require a separate command to correspond to the new system of measurement. The system of measurement in use is indicated on the screen by "m" for mm, "i" for inch, "d" for Didot and "p" for pica.



```
1m△10, dF10, m=, m̄1⊢20, m̄2⊢20, K
x10, Ky20, p⊢28. Linotronic - th
e Area typesetting composer whic
h meets all requirements:▌
                                ▬
m̄000  L000  sp 008  lr 01.11,50p

△10,0 F 00.10,00d    = 000,00m
      y 05.07,75p    x 28.05,25p
```

The Linotronic display screen

Display screen symbols and their meaning

Negative symbols in running text
(upper half of screen)

1 = font number (1–8)
m = system of measurement (m, i, d, p)
K = base coordinate
k = operating coordinate
x = horizontal coordinate value
y = vertical coordinate value
⊢⊣ = line length
△ = point size
F = film advance (leading)
◊ = film advance within the line (base line jump)
f = zero film advance within a line
E = Indent
e = zero indent for one line
N = no exposure
☒ = zero set width value
⇄ = input kerning value
⇆ = operate kerning
a = switch off kerning
h = semi-automatic on/off
- = hyphen
▼ = minimum spaceband

A = auto-leader
↾ = elevate
l = quad left for a line
m = quad centre for a line
r = quad right for a line
L = continuous quad left
M = continuous quad centre
R = continuous quad right
1 = fixed spacing 1 pt
1 = fixed spacing 1 unit
⌷ = fixed spacing 1 thin
▯ = fixed spacing 1 en
□ = fixed spacing 1 em
ℿ = tab column number
T = tabular setting on
Tt = tabular setting on/off
t = tabular setting off
S = column setting on
s = column setting off
⧖ = rule weight
⌶ = distance between horizontal rules
⟷ = distance between vertical rules
w . = repeat sign for rules or text lines
⥊ = exposure sign for horizontal rules
↕| = exposure sign for vertical rules
⊗ = close cassette

continuous indication on lower half
of screen

ℿ = tab. column number
Z = line counter
kw = actual spaceband value in units
zr = line length remainder
Δ = point size
F = film advance (leading)
E = indent
g/V = shift
y = actual Y-coordinate value
x = actual X-coordinate value

The keyboard

The operating keyboard of the Linotronic input unit may vary in layout depending on special requirements (Linomat, floppy disc, etc). The description here applies to the standard keyboard which is uniform to all machines.
The input of information into the Linotronic is by two kinds of commands: setting commands which cover simple instructions such as font selection, no-exposure, line commands, etc; and setting commands covering functions which have multiple action which are called up by a command key and input by a numerical key (sometimes together with a period or comma) and which are terminated by a word space (spaceband) or the initial command key being depressed. There is no need to pre-key or re-key zeros. The basic rule for the input of instructions is to make all single instructions without depressing blank keys and make multi-function instructions by depressing blank keys. If the typesetting program discovers an error, such as a non-allowable point size, a continuous buzzer sounds and the keyboard is locked. The wrong instruction must be corrected by cancelling. The instruction is then cancelled off the screen and the keyboard is again free. If an input command is to be set to zero (e.g. indent), the relevant key is depressed twice.

To explain the logics of command inputs, the following shows some frequently occuring commands for different systems of measurement:

line measure 90 mm
key sequence: ↔ 90,☐

line measure 90,25 mm
key sequence: ↔ 90,25☐

line measure 2½"
key sequence: Inch ↔ 2,5☐

line measure 2⅛"
key sequence: ↔ 2,125☐

line measure 20 Pica
key sequence: Pica ↔ 20.☐

line meaure 20 Pica 6 pt
key sequence: ↔ 20.6,☐

line measure 20 Pica 6½ pt
key sequence: ↔ 20.6,5☐

Didot/point measures are input in the same way as pica measures

type size 8 pt
key sequence: △ 8,☐

type size 8½ pt
key sequence: △ 8,5☐

film advance 11 pt
key sequence: ◇ 11,☐

film advance 18 pt
key sequence: ◇ 18,☐ or ◇ 1.6,☐

Film advance exceeding 99 pt must be input only in the second mode
(Didot ems and point)

kerning value 0.12 mm
key sequence: ⇄ -,12☐

kerning value ¾ pt
key sequence: Didot ⇄ -,75☐

spacing value 1 mm
key sequence: mm ⇄ 1,☐

spacing value ½ pt
key sequence: Didot ⇄ ,5☐

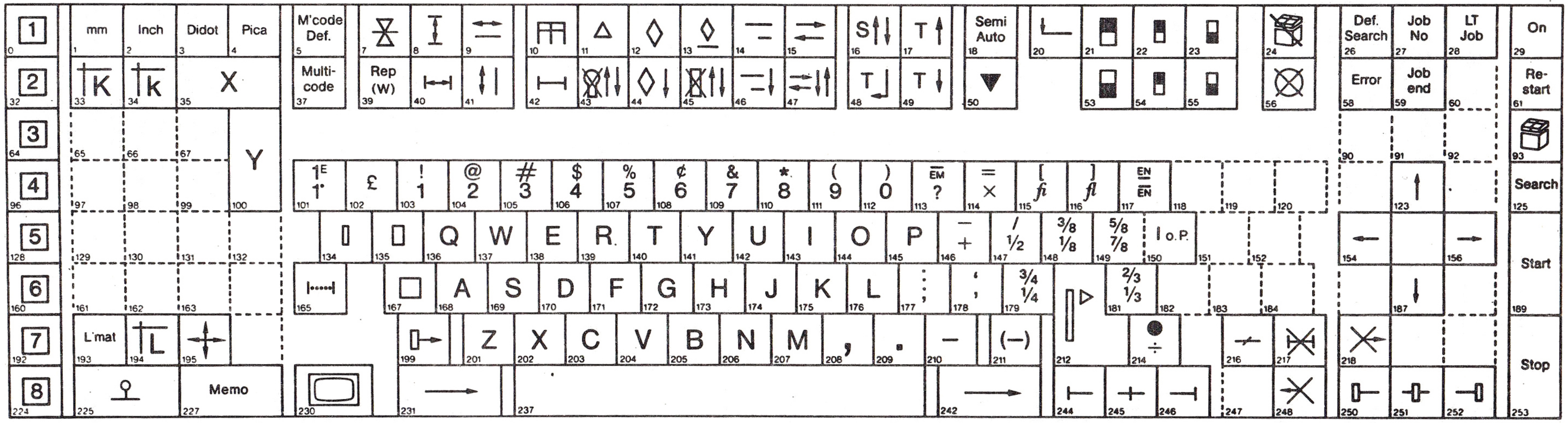
spaceband minimum 4 units
key sequence: ▼ 4☐

☐ = word space or key initiating command

Illuminated keys and control lamps

To prevent the operator from forgetting commands which are only required occasionally, the Linotronic is provided with a certain number of illuminated command keys. The lamps in these keys light up as soon as the corresponding value is not zero. On other illuminated keys the lamp indicates whether a function is on or off. To the right of the keyboard panel is a control lamp which lights up when the photo unit is ready for use. This lamp is extinguished while text or rules are being exposed.

The Linotronic keyboard


1
2
3
4
5
6
7
8
mm
Inch
Didot
Pica
K
k
X
Y
L'mat
L
Memo
M'code Def.
Multi-code
Rep (W)
Semi Auto
Def. Search
Job No
LT Job
Error
Job end
On
Re-start
Search
Start
Stop
1E 1•
£
! 1
@ 2
# 3
$ 4
% 5
¢ 6
& 7
* 8
(9
) 0
EM ?
= ×
[fi
] fl
EN EN
Q
W
E
R
T
Y
U
I
O
P
− +
/ ½
⅜ ⅛
⅝ ⅞
I o.P.
A
S
D
F
G
H
J
K
L
: ;
' ,
¾ ¼
⅔ ⅓
Z
X
C
V
B
N
M
,
.
−
(−)
÷
S
T

Blank keyboard keys are replaced to specification by options for further command keys

0 [1]
32 [2]
64 [3]
96 [4]
128 [5]
160 [6]
192 [7]
224 [8]

Font selection

A key is provided for the selection of each of the 8 fonts. The key lights up after it has been depressed and will remain lit until another key has been depressed to select another font. Font selection may be made as often as required anywhere within a line and applies from the moment the key has been depressed and lights up. The rule font in position 7 is automatically selected as soon as a rule is exposed. If no font has been selected, text will not be exposed.

Special font with layout plug at 8

1 [mm]
2 [Inch]
3 [Didot]
4 [Pica]

Selection of measuring system

The key remains lit until another system of measurement is selected. The measuring system should be decided upon before the input of formats or rule widths, but may be changed anywhere in a line. If no measuring system is selected, input is in mm.

33 [⊤K]
34 [⊤k]
35 [X]
100 [Y]

Input of coordinate values

The keys [⊤K] (base coordinate) and [⊤k] (operating coordinate) in conjunction with the keys [X] or [Y] input the coordinates value, and they determine the position on the film where text or rules are to be set. The base coordinate key [⊤K] inputs the starting point on the film. By means of the base coordinates several jobs can be exposed on one sheet of photographic material and work preparation can be made independently for each individual job. The operating coordinate key [⊤k] governs (with reference to the base coordinate) the location of the exposure. Key [X] inputs horizontal and key [Y] inputs vertical coordinate values.
An example for the input of horizontal coordinate values governing the left-hand start of a line or rule:

Setting is to start 54.5 mm from the extreme left margin and 20 mm from the top.

Key sequence: [⊤K] [X] 54,5 ☐ [⊤k] [Y] 20, ☐

The max. coordinates values are 305 mm horizontally and 325 mm vertically. Base coordinate inputs cancel possible existing operating coordinates. All coordinate inputs cancel accummulated film advances or rule distances. Film advance and rule distance values are maintained.
The operator should take care not to exceed the available max. format of the photographic material of the overall setting coordinate format of 305 x 325 mm when combining base and operating coordinate with formating instructions. The absolute zero point is at about 2 mm from the left and 5 mm from the top if the photographic material has been placed right to the stop in the film cassette.

42 [⊢⊣]

Inputting the line length

The input of the line length is by depressing key [⊢⊣], followed by the numerical value and then word space. The line length may be input in any of the four measuring systems. The max. line length is 305 mm.
The line length may also be input once a line has been started and remains effective until a new line length has been input. The line length is also maintained when changing coordinates. The X-coordinate value governs the left-hand start of the line length.
After the input of the line length the line length remainder on the display screen will instantly indicate the line length. With every character that is being keyed, the line length remainder decreases. If the line is overset, a continuous buzzer is sounded and the line length remainder shows a minus-value (see also spaceband minimum).

11 △

Point size input

The point size may be input anywhere at the start or during the setting of a line and becomes effective from being input. Point size mixing maintains the base line within a line. Example of point size inputting:
Key △ figures 6,5 and word space. This means a point size of 6½ pt. Point sizes in full points may be set by keying the word space directly after the comma. The comma, however, is essential – as for other setting instructions. If no point size instruction has been given, the program will not accept text.
All point sizes from 4–48 pt can be input in steps of ½ pt, thus providing 89 different point sizes.

Example:

Point size change within a line

key sequence: △ 12,☐ type size change △ 8,☐ within a △ 12,☐ line ⊢

12 ◊

Film advance (leading)

Film advance is effected with the line end command before exposing the line. The reference point for film advance is always the type base line. Advance may be input at any time during the setting of a line and can be input like the Y-coordinate values with the same minimum and maximum values. The film advance value which has been input is maintained until a new value is input. It is also necessary to input a film advance value when compressing setting. The accummulated film advance is cancelled out by new X or Y coordinate inputs Min. and max. film advances range from 0.01–325 mm.

Example:

Film advance
Film advance

Film advance

Film advance

key sequence: △ 12,☐ ◊ 6,☐ Film advance ⊢
Film advande ⊢ △ 24,☐ ◊ 12,☐
Film advance ⊢ △ 12,☐ ◊ 6,☐
Film advance ⊢

44 ◊↓

Film advance zero for one line

The key will light up until the line has been completed. There will be no film advance in the line in which the command was keyed. In the following line the film will again be advanced by the previously input value. This command can be given at any position within a lin.

Example:

Check, whether the lintel is still on the roof. Our test will show you why! HL

key sequence: . . know why! ⊢ HL ◊↓ ⊣

Film advance (leading) within the line (Base line jump)

This key serves to move the base line within a line upwards or downwards. This may be done as often as required within any line. To move the base line down the command is input as for standard film advance. To move the base line up (reverse leading) a sign is keyed prior to the first figure of the reversing command. Any input values are available as for normal film advance. Return to the original base line by depressing the command key ◊̲ and keying a directly subsequent word space or by twice depressing the command key. The line end command automatically returns setting to the original base line. Film advance within the line is used primarily for superior and inferior figures and characters, and making up fractions.

Example:

1000 m^3 H$_2$O

key sequence: 1000 m ◊̲ -1,5☐ △ 8,☐
3 ◊̲ ☐ △ 12,☐ H ◊̲ 1,☐ △ 8,☐ 2 ◊̲ ☐ △
12,☐ 0 ⊢

14 =

Indents

This command can be input at any stage within a line. The max. indent corresponds to the line measure. As long as an indent has been preset, the command key for indent will light up. The indent is cancelled by depressing that same key and a subsequent immediate word space command or by twice striking the indent key. The indent is then killed from the line measure.

Example:

The embankment brace has the highest carrying power.
It has the stablest and widest support.
The brace, however, does not fit the domed roof. It also rusts easily.

Key sequence: . . . carrying power [⊢] [=] 10, ☐ It has . . .
easily. [⊢]

46 [=↓]

No indent for one line

This command cancels an input for an indent. The command may be keyed at any time during the setting of a line. The indent command is reactivated automatically when setting the next line.

Example:

We are looking for a printer who has sound training in

Offset Printing

to operate a new two-colour machine. He must have good experience in printing color work to exact standard.

Key sequence: . . . . in [⊢] [△] 14, ☐ [◊] 6, ☐ [3] [=↓]
Offset Printing [△] 8, ☐ [◊] 5, ☐ [1] to operate
. . . . .

15 [⇄]

Kerning (for storing only)

The kerning facility makes it possible to kern individual letters or set complete texts more compactly or letter-spaced. The input system is as for formats or indents.
Minimum values are the same. Max. values are limited to 18 mm = 0.709 inch = 4 Didot = 4 Pica and 3.25 pt. Kerning values are indicated by a divis mark in front of the numerical value.
Caution: Kerning values must not exceed the width values of the corresponding characters.
As long as a kerning or spacing value is defined, the command key will light up. The command may be input at any stage during the setting of the text. The command is cancelled by pressing the command key down and then keying the word space or by the input of a new value.

47 [⇄⇅]

Kerning on/off

This command serves to activate the stored kerning or spacing value. The key lights up when it is first depressed (kerning „on"). When the key is again depressed, the control lamp will extinguish (kerning „off") and normal width of type is returned to. The input value remains stored and can be repeated.

Example:

A Leader in Performance

Key sequence: -,5 ☐ A L [⇄⇅] e [⇄⇅] ader in ,8
☐ [⇄⇅] Performance [⇄⇅] [⊢]

The values for kerning may be input when starting a line or whenever they are required.

43 [⊠⇅]

No flash

This command may be given at any stage during the setting of a line. The illuminated key shows that the command has been input set. Once the key has been depressed, subsequent characters are calculated by their width values but not exposed. The command is cancelled by again depressing the same key. When reaching the end of a line, the command is automatically cancelled.

Example:

Branches: Piccadilly
Haymarket
Knightsbridge
Lothbury

Key sequence: Branches: Piccadilly [⊢] [⊠⇅]
Branches: [⊠⇅] Haymarket [⊢] [⊠⇅] Branches: [⊠⇅]
Knightsbridge [⊢] [⊠⇅] Branches: [⊠⇅] Lothbury [⊢]

45 [⊠⇅]

Set width value „zero" (no width)

This command results in the absence of width movement for the following character(s). This means different characters can be exposed in the same position. Cancellation of the command as in „no flash" by depressing the command key or automatically when line end is reached.

Example:

8¹/₂ hours

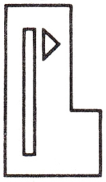
Key sequence: 8 [△] 8, ☐ [◊̲] -1,75 ☐ 1 [⇅⊠] [◊̲] -,75
☐ - [◊̲] ,75 ☐ 2 [◊̲] ☐ [⊠⇅] [△] 12, ☐ hours [⊢]

216

248

„Killing“ of characters or lines

The ☒ kill character key cancels the last character or command in the fourth line on the screen. By holding the key down, a continuous function is activated and lines which have disappeared at the top of the screen are not moved on. A maximum of 4 x 32 characters can be individually retrieved even if a line holds more than 128 characters. By input of the „cancel line“ command, however, a correction can be made. Typesetting commands are cancelled by depressing key ☒ as in cancelling a character. The value set before the typesetting command is re-established. Key ⋈ cancels the complete line including all typesetting commands and instructions in that line. When cancelling a very long line containing more than 128 characters, the last 16 characters (without commands) of the previously exposed line are displayed in the fourth line on the screen to show the operator where to continue setting.

212


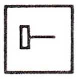
244

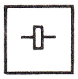
245

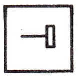
246

Quadding and justification command, line end commds.

These commands control the line end. When using the elevator command ⊳ the line is justified to the total measure if there is at least one word space in the line. The commands left, centre and right ⊢ + ⊣ also operate like the line end command so that the line is ranged left, centred or ranged right. In block setting the word space corresponds to the spaceband value indicated in units on the screen (Example: 18 = em-quad, 09 = en, 06 = third of an em). When ranging left or right or when centreing the word space is 1½ -times the spaceband minimum if this does not result in exceeding the line measure.

250


251


252


Continuous quadding

These illuminated keys serve to quad the line with every elevator command. Continuous quadding commands permit a saving in keyboarding especially in the semi-automatic mode when type is to be set range left right or centred. The commands are cancelled by depressing the command key.

165

Filling a line, Auto leaders

The fill-line command serves to fill a line before, after or in-between text matter with one, two or three characters which are alternately exposed one after the other. In this mode of operation full points used as leaders will be ranged vertically in the lines being set. The characters used to fill a line are keyed after the fill-line key has been depressed. The command is cancelled by keying a word space. In second and subsequent lines to be filled, only the fill-line and word space keys need be used and the fill characters are called up automatically.

Example:

Beginning....................End
Start ....Finish
Entrance ....Exit

Key sequence: Beginning ⊢ ▯ . ▯ ☐ End ⊳

Start ⊢ ☐ Finish ⊳ Entrance ⊢ ☐ Exit ⊳

50

Spaceband minimum

To allow the closing up of an overset line, the spaceband minimum may be varied within the range of 0–18 relative units. After switching on or re-setting or re-start, the spaceband minimum is at 3 units. The spaceband minimum value also controls the bleeper justification signal which tells the operator that he has reached the justification position. This spaceband minimum may also be input during the setting of a line. If the spaceband minimum is not reached when setting text (line full) the machine will not accept a line end command and a continuous-buzzer will sound (at the latest from 18 units). The value by which the line has been overset is shown as a minus value by the line length remainder. Even at this stage the spaceband minimum value may still be changed to allow the text to be closed up in the line.

18

211

Semi-automatic mode

In the semi-automatic mode, the line end is obtained by elevator or quadding commands or by the last word space or a hyphen, so that the operator need hardly concern himself with line justification. When setting long words at the end of a line the operator may insert discretionary hyphens by using the key (–). The machine will then select the most suitable point to divide a word which will still fit into the line. During the semi-automatic mode the key is illuminated. By depressing the key Semi Auto again, normal operation is restored.

7 [⧗]

42 [⊢⊣]

8 [I]

40 [|↔|]

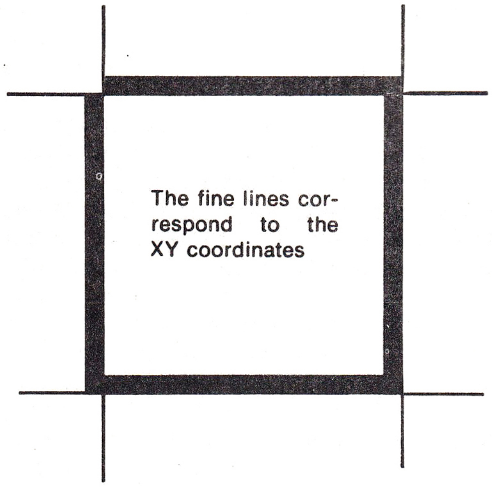
9 [⇄]

41 [↕|]

39 [Rep (W)]

Setting rules

In the basic version of the Linotronic, the setting of rules requires the use of the rule font C1210. This font is placed into position 7 on the font drum. The rule font holds 36 rule elements and 69 special characters (see C1210 keyboard layout). The corresponding width plug holds the widths of these special characters only. The width control of rules is via the computer. The rule elements in the font are divided into 6 weights (see table) in three lengths each. Rule elements are provided for horizontal and for vertical ruling. During exposure, the zoom optics are set to the 24 pt size by the program. The rule elements which are in 8 pt size on the font are thus enlarged to their final length and weight. The three different rule elements will then be 8 mm, 2 mm and 0.5 mm long. The program automatically calculates how many and which rule elements are to be combined to expose a specific length of rule. For example, a 53 mm rule is produced by first exposing six 8 mm elements, then two 2 mm elements and finally two 0.5 mm elements. This applies to both horizontal and vertical rules. During horizontal exposure, positioning is by the periscope mirror. Vertical rule setting is by means of the film transport.



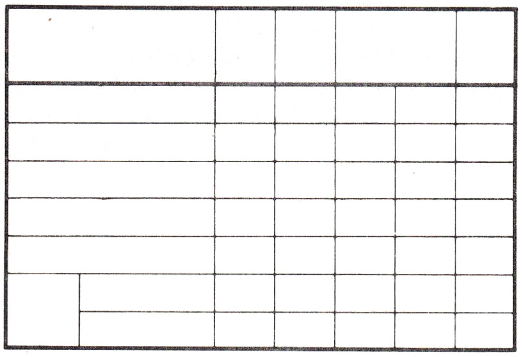
Makeready of the line elements

There is no need to input type size or font when setting rules. The machine program automatically switches to the rule font and the required size. After completion of rule exposure, the previous typeface and size are automatically returned to. The thickness of a rule is determined by depressing key , a guide number from 1-6, and finally the space bar. The width of a rule (horizontal or vertical) is input via key [⊢⊣] in the same way as a line measure. Max. measure for the horizontal is 305 mm and 325 mm for vertical rules. Exposure of the first line is governed by the input coordinate values. If text has been set after input of the coordinate values, then the rule will be set at the point reached by the film advances. In subsequent rule setting, the rule distance key ([I] horizontal and [⊢⊣] for vertical setting) controls the position of the next rule exposure. As the program does not know whether the operator is next using text or rule setting, the display screen always shows the coordinate values which would apply to text exposure. After initiating a rule exposure, the rule end point is indicated. As the input film advance is added to the Y coordinate, while the rule distance applies to the rule, it may happen that the Y coordinate indication is not a true indication (for instance where film advance and rule distance are not indentical). Film advance commands apply to text lines only, rule distances apply to rule setting only. By adding film advances, specific positions may be reached for ruling (blank lines, for instance, affect the distance between rules). Exposure of rules is only after the keys [↕|] (horizontal) and [⇄] (vertical) have been depressed. To effect ruling with identical distances between rules and for rules of uniform thickness, it suffices to input the rule distance via key [I] or [⊢⊣] and key in the required number by key [Rep (W)]. Up to 255 rules can be repeated, including the first rule. Repeat exposure of rules is also effected by keys [⇄] (horizontal) and [↕|] (vertical). The coordinate values on the display screen show the rule end point of the last rule as soon as the operation is initiated. After repeat rule exposure it is possible to work from this position using identical or altered thicknesses or distances between rules. The repeat factor automatically returns to 1 after exposure of several rules. Text may also continue to be set at normal film advance. When changing from horizontal to vertical ruling (or vice versa) it is recommended to input a new coordinate value to bring the XY indication on the screen to the actual operational condition indication. When setting rules, allowance must be made for the weight (thickness) of the rule.
Vertical rules are ranged right (the right hand edge of the rule corresponding with the X coordinate. This makes it necessary for the weight of the rule to be added to the X coordinate.

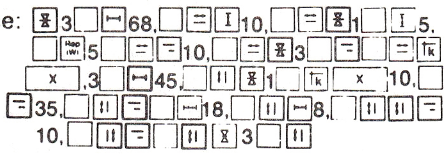
The base of the horizontal rule corresponds to the Y coordinate and consequently the weight of the horizontal rule must be added to the Y coordinate.

The indent may also be used for ruling. For horizontal ruling the value is deducted from the left line start. For vertical ruling it is deducted from the top. Zero indent for a rule is not possible. Rules also cannot be related to the depth of tabular columns.

Example:



Key sequence:



10

42 ⊢⊣

17 T↑

48 T↲

49 T↓

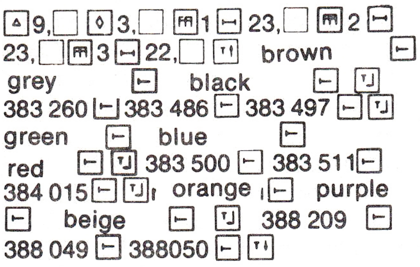
Tabular setting

Tables may be set horizontally or vertically. Tabular setting requires the input of a line length definition. This definition encompasses the formats of the required tabular columns. The first column (seen from the left) has the column number 1, the second column has no.2, etc. Up to 25 column formats may be defined. By shifting the X coordinate, an unlimited number of columns may be set in a table. The input of a line length definition is made before setting the actual table, but the definition may be changed or corrected at any stage during setting the table. The definition is initiated by depressing key ℿ and then keying the column number (1–25). Thereafter key ⊢⊣, the format and the word space are activated. This means that every column format is individually input. Exposure sequence is governed not by the input sequence, but by the column number (address). A definition applies to one column format only. If there are several columns of the same format, the definitions have to be input individually. Tabular definition becomes effective only after key T↕ has been depressed. At that instant the first column indication appears on the screen in place of the line length remainder indication, together with the column number. Within this format text or commands may then be input as in normal operation. The elevator or a corresponding quad command (range left, right or centre) acts as column end command. After the column end command has been given, the program changes and the display screen switches to the next column format, so that keyboarding of the new text can begin. Tabular setting is horizontal from left to right in the first instance. A blank column is jumped by simple operation of the elevator key or another quad command. After completion of the final tabular column, key T↲ is depressed to return to column 1 for the next tabular line and effect film advance. Any required change in the film advance is input after having given this command. It is also possible to change film advance within a tabular line. The required command must then be given within the relevant column (observe Y coordinate indication). Zero film advance for a line effects only one column of a line. It is also possible to indent within a column (for instance to leave a space for vertical rules). The indent will apply to every column until it is cancelled. The tabular setting function is ended by depressing key T↕ (this is only possible as long as no tabular setting has been put into memory). The machine then returns to the previous line length. The tabular definition remains in the memory until it is cancelled by (a) new commands being inserted, (b) re-set, or (c) if the machine is switched off.

Example:

brown	grey	black
383 260	383 486	383 497
green	blue	red
383 500	383 511	384 015
orange	purple	beige
388 209	388 049	388 050

Key sequence:



16 S↕

Column setting

The column setting key allows the operator to set columns from top to bottom and not horizontally from left to right. Any accumulated leading in the table is cancelled by depressing the column setting key (S↕). Observe the Y coordinate! The column setting key can be used only at the start of a column before a character is keyed in. This makes it necesary to switch off the column setting after setting the last line. The lamp will go out only after the final line has been sent away. After completing column setting, normal setting can continue at the level of this last line in the adjacent right-hand column. By re-setting to column setting, however, it is possible to return to the level of the first line in the table and again set vertically down. Another possibility is offered by twice depressing the column setting key to permit horizontal setting in the first line of the adjacent column.

39 Rep (W)

Repeat line

Lines of text may be repeated up to 255 times in the same manner as repeating rules. At the start of or during the setting of the line the number of lines to be repeated is input and a line end command is added. After completion of multiple exposures, the machine automatically returns to single exposure. In tabular setting, multiple exposures of text is possible only in column setting. Max. number of characters in a line is 1024 (1K byte). Every character displayed on the screen corresponds to 1 position (1 byte).

Example:

Line repeat
Line repeat
Line repeat
Line repeat

Key sequence: Line repeat [Rep (W)] 4 ☐ ⊢

116 ¸ ‐

117 ¨ ¨

149 ^ ^

181 ´ ´

214 ` `

150 I o.P.

Accented characters

The setting of accented characters is accomplished by setting the accent and then the corresponding character. The lower accents on the keys are for lower case setting, the upper accents are for capitals.
Accents are automatically centred to the corresponding character. When setting accents on an "i", the key [I o.P.] (dotless i) must be used. The German standard font carries only the most common European accents. Other accents must be keyed in from a pi font (font change between two characters). Please refer to the relevant keyboard layouts.

230 ▭

Calling up input values

To check data not permanently displayed on the screen, use key ▭. The required values appear in the third line from the bottom on the screen after the command key has been depressed first, and the call-up key has been used immediately afterwards. Either X or Y must also be input when calling up coordinates. When checking tabular formats, use key the column number, and key ⊢ before operating the call-up key. A called-up value remains on the screen until another call-up check is made. Using the call-up key does not affect the operation of the machine.

61 Re-start

Re-start

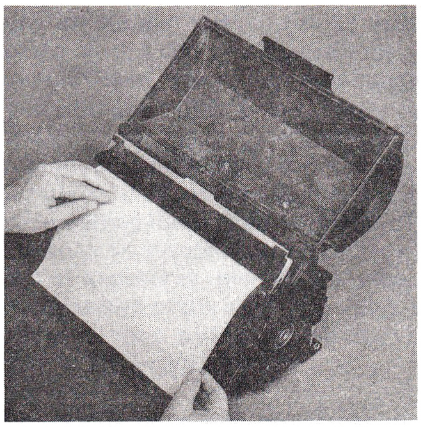
The re-start key [Re-start] cancels all information stored in the memory of the keyboard. All coordinates values and other commands go to zero. After changing the settings in the machine, it is recommended to re-start or re-set (switch above width plugs). Re-set applies to the whole machine including the cassette.

56 ⊗

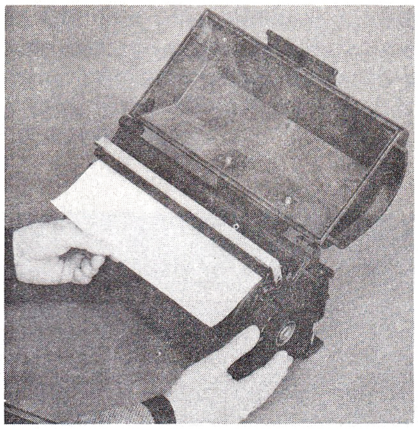
The film cassettes

Two kinds of cassettes are available. The standard cassette is operated as follows: place the cassette in the darkroom with the gear wheel to your right. Open the lid by pulling the cover plate slightly away from the cassette. The cover can then be hinged back. Turn the film drum by hand until the clamp bar is at the top. By pressing the bar, the sheet material (one sheet only!) can be slid under the bar (up to the stop) and it is secured by releasing the bar. The emulsion side must face up. In right-reading exposure the material is fixed to the left edge of the drum, in reverse-reading exposure it is fixed to the right. Turn the drum by hand by means of the gear wheel and smooth the material against the drum (without exerting finger pressure and causing finger marks on the material). The lower end of the sheet of material is fixed by means of adhesive tape to the drum. Important: the material must lie perfectly flat on the drum. Check that the sheet is clamped securely. The cassette is closed by firmly pressing down the lid. Before leaving the darkroom, check that the cassette is closed securely (also check the shutter).
The de-luxe cassette is similar in appearance to the standard cassette, and is opened and closed in the same manner. The main diffe-

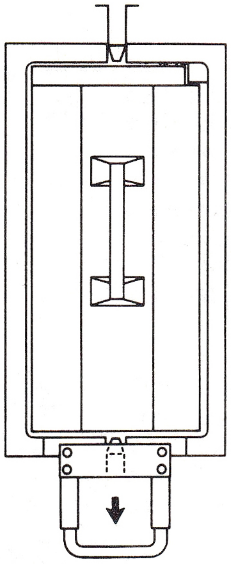
rence is in the way the sheet material is held on the drum. Material is positioned as follows: half open the clamp which lies across the drum, turn the drum (seen from the operator's side) back to the stop, and then open the clamp fully. Slide the material into the upper grips, half close the bar and turn the drum forward until the material is almost under the clamp. Pressing the clamp down results in the material being held firmly at the lower end of the drum. The drum is now automatically locked and can be turned only after the cassette has been closed. The film drum need not be turned to a specific position before being placed into the photo unit. The film transport automatically moves to zero before the first exposure takes place and at the same time clicks into the take-up disc of the cassette. After inserting the cassette, move the hinged bar above the cassette inward and thereby centering the drum in the cassette. Before the first line is exposed, the cassette automatically opens. After completing a job, close the cassette by operating key ⊠ and an elevate command. The cover of the photo unit must not be opened until the cassette is closed, otherwise the material will be fogged. If it is necessary to open the photo unit after starting work (for instance when changing fonts), it is essential to first close the cassette.



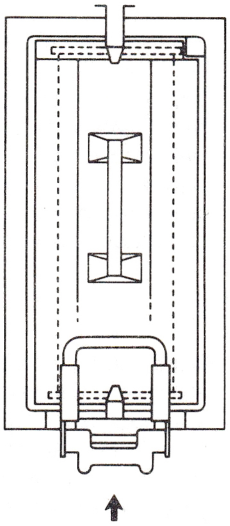
Insertion of the photo material



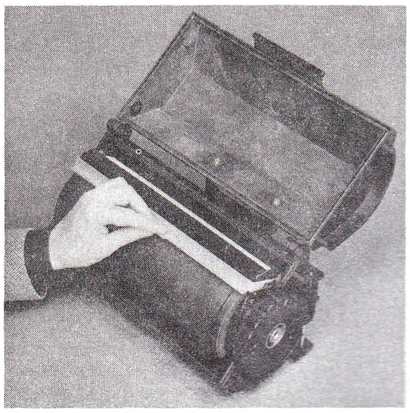
Turning the drum



Insertion or removal
of cassette



Cassette locked in
exposure unit



Tightening the photo material

Setting the keyboard and photo unit

Apart from the keyboard and the width plugs, there is a switch and two knobs on the keyboard. These are situated behind the cover on the left above the width plugs. By moving the switch back (it will return automatically to basic position), a re-set function becomes effective for the whole machine (re-set cancels all existing stored information). This operation closes the cassette should it be impossible to close it from the keyboard. The knob to the right of the switch serves to adjust the brightness of the screen image. The second knob adjusts the volume of the buzzer which sounds when a line is overset or in case of faulty operation.

To the right of the film cassette in the exposure unit there are 4 switches and 3 knobs which have the following functions (from top to bottom):

⊙ ○• Font drum stop to change a font (do not forget to switch back to "operate")

> >> Font drum speed. The drum can revolve at two speeds.

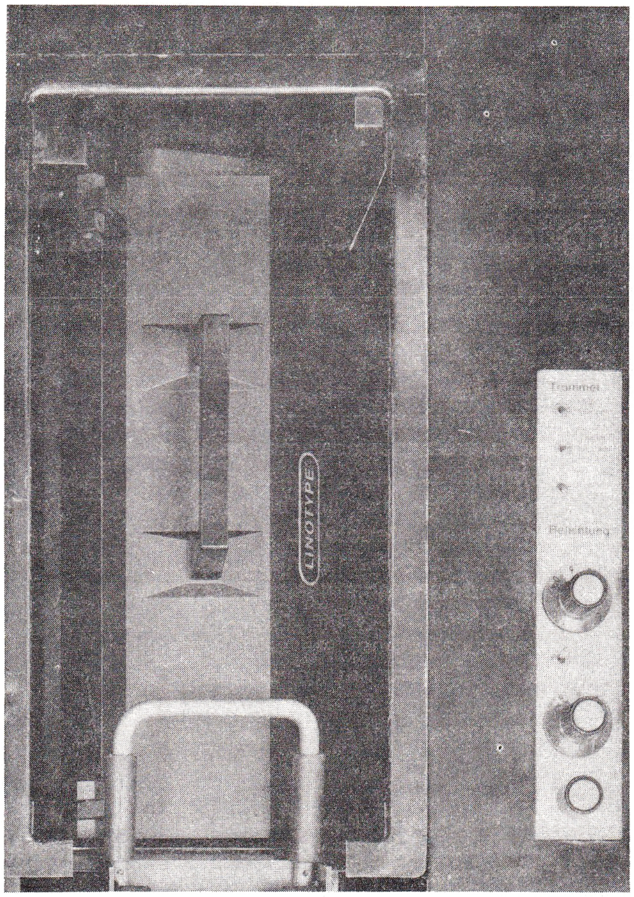
Slow speed:
4 - 28 pt = 350 rpm
30 - 48 pt = 150 rpm

Fast speed:
4 - 28 pt = 1100 rpm
30 - 48 pt = 350 rpm

1 = 2 / 1 ≠ 2 Double font layout: fonts are double-loaded, positions 1 + 2, 3 + 4, 5 + 6 and 7 + 8 carry identical fonts. This gives a substantial increase in the speed of exposure even when operating at the low drum speed. In the fast speed the increase is less pronounced. Double font layout means that only 4 type faces are directly accessible.In double layout, position 1, 2, 5 and 7 are approached.

F P Exposure control knobs, film + paper: these knobs control the density (intensity of the flash lamp) on the film or photographic paper product. Density, however, depends not only on the control setting, but also on the developer or the developing unit, so that correct setting can only be made once the machine has been installed. The set values then remain fixed for some time. The switch between the knobs controls the exposure of film or photographic paper. Where extra sensitive film materials are being used, it may be necessary to work to paper exposure. New exposure settings are normally required only where film or paper materials or the developers are changed. After prologed use there may be some drop in the intensity of the flash lamp which can be adjusted by re-setting the exposure. The life of the lamp depends on several factors, such as the number of exposures, the pre-set exposure, and the type size of the average setting. In single-shift operation, a life of six months to one year may be expected.

R ← Я Control knob for right-reading or reverse-reading exposure. By turning the arrow to R (left) right-reading exposure is obtained, by turning the arrow to Я reverse-reading exposure is obtained. Two prisms are moved inside the optical path. At the same time the direction of the periscope mirror is automatically changed. Important: when using right-reading exposure clamp material to the left of the cassette, and to the right when exposing reverse-reading. The coated (emulsion) side of the material must always be facing up. Make sure when changing the setting that the knob is turned as far as possible.



Control board of the exposure unit

Operational sequence in the Linotronic

1. Check font position and cleanliness of fonts on the drum. Insert special font if special characters are to be used, and have keyboard layouts ready.
2. Check that width plugs correspond to font position.
3. Set photo unit (drum speed, exposure, right/reverse reading) and correct if necessary.
4. Place material to be exposed into the cassette in the darkroom. (Take care to differentiate between film or paper, right/reverse reading). Check that the sheet size suffices for the work being set. Check that the cassette is firmly closed. Place cassette into the photo unit and center by means of the hinged bar. Caution: make sure that the take-up for the cassette lock is at the top. If this is not, give the re-set command (switch a left above width plugs). If the machine has been switched off, switching on will result in a re-set function.
5. If the control lamp lights up, (key 93) the machine is ready for operation. The lamp extinguishes during exposure. Never open the photo unit while operating. If it is necessary to open the photo unit, first close the cassette.
6. Once setting is completed, close the cassette (opening is automatic) by depressing key ⊠ and elevate. When ruling only without setting text, close the cassette by operating the re-set switch to left above the width plugs. Caution: re-set or re-start key Re-start to be operated only after completion of exposure.
7. Removing cassette from photo unit. Caution: fully swing out clamping lever to unlock cassette from take-up device. Too rapid a removal involves the risk of the cassette opening. Do not leave photo unit open longer than necessary. This will protect fonts and optics from dust.

Care and maintenance of the Linotronic

Faultless setting depends on clean and undamaged fonts. To prevent unnecessary soiling of typefaces, keep the photo unit closed and open it only to change fonts or cassettes. Fonts should be cleaned at least once a week or more frequently where local conditions (atmospheric pollution) may make this advisable. Fonts are quickly cleaned using a soft film cleaning brush. More thorough cleaning is obtained by placing the font for a few minutes into a film cleaning bath and afterwards wiping it dry using a pad of cotton wool. Before replacing the font on the drum, it is recommended to check it on a light table to ensure that no fluff or other particles are on it. Avoid mechanical rubbing under force as this might damage the emulsion side. The optics in the photo unit, as far as they are accessible, should be cleaned using a lens brush or a lint-free cloth. Optics need not be cleaned as frequently as the fonts. In other respects, keep the machine and keyboard clean.

On the electrical supply side of the machine is a circuit breaker with several fuses. Behind the right-hand side cover of the exposure unit are five circuit breakers and also a number of fuses. In case of non-functioning of individual parts of the Linotronic or a blocking of the Linotronic keyboard, check these circuit breakers. The power is indicated by the lettering alongside them. Caution: whe never the cover is opened on the operating or exposure unit, disconnect the power supply plug.

cap height in mm		descender	film transport	
4p	1.00	0.30	1.50	Hng
5p	1.20	0.40	1.75	Hng
6p	1.50	0.45	2.25	Hng
7p	1.75	0.50	2.50	Hng
8p	2.00	0.60	3.00	Hng
9p	2.25	0.65	3.50	Hng
10p	2.50	0.70	3.75	Hng
11p	2.80	0.80	4.25	Hng
12p	3.00	0.90	4.50	Hng
13p	3.25	0.95	5.00	Hng
14p	3.50	1.00	5.25	Hng
15p	3.75	1.10	5.50	Hng
16p	4.00	1.20	6.00	Hng
17p	4.25	1.25	6.50	Hng
18p	4.50	1.30	6.75	Hng
19p	4.75	1.40	7.25	Hng
20p	5.00	1.50	7.50	Hng
22p	5.50	1.60	8.25	Hng
24p	6.00	1.70	9.00	Hng
26p	6.50	1.90	9.75	Hng
28p	7.00	2.00	10.50	Hng
30p	7.50	2.20	11.25	Hng
32p	8.00	2.30	12.00	Hng
34p	8.50	2.50	12.75	Hng
36p	9.00	2.60	13.50	Hng
40p	10.00	2.90	15.00	Hng
44p	11.00	3.10	16.50	Hng
48p	12.00	3.50	18.00	Hng

Cap heights, descenders and rule thicknesses

The measurements given in this table correspond to the values of Helvetica roman. Other typefaces may differ slightly. In case of doubt, make a test exposure to avoid the need of extensive corrections. This observation applies not only to cap heights and descenders, but also for kerning and other typesetting functions.

line thickness 1	0.10 mm	─
line thickness 2	0.20 mm	─
line thickness 3	0.40 mm	━
line thickness 4	0.80 mm	▬
line thickness 5	2.50 mm	■
line thickness 6	0.20 mm	……

Operation for (IWT) User Format and IEQ (Indices - Exponents - Quotients)

User Defined Formats

Although Operator Input Function Codes are concise and simple to set up, there are numerous occasions when these codes can be very much reduced for use with repeat style setting of Text, Tabular, Display, Advertising, or other jobs. Available with all Linotronics, its principle function is to store a variety of instruction and character codes in the computer core (1 K RAM Board). By tapping a short recall code, keyboard operators are able to quickly access this stored information.

The total number of User Defined Formats can vary. The memory capacity is 1k=1024 bytes of which only 1015 can be used for storing Multicodes. For each stored Multicode 2 extra bytes must be used for addressing purposes. The maximum number of Multicodes which can be stored is 250.

For instance: 4 User Formats with 246 codes each, or
9 User Formats with 100 codes each, and
1 User Formats with 95 codes each, or
100 User Formats with 8 Codes each

Each format can consist of up to 246 characters and/or command codes. User Formats can be "chained" to increase the storage and/or broken into sections by means of a "break point" instruction. Each of these sections is linked with, or separated from, the previous section of the Format, depending on the job-style requirements. Keyboard operators would first access to the relavant Format, then sequentially action each section within the Format, as required, by tapping [START] key.

Start of User Defined Formats

All User Defined Formats (UDF) must first be allocated a numeric position in the memory board. Starting with No.0 (zero) and progressing to the No. 250.

1) Open Format [M'code Del.]
2) Index number from 0 up to 250
3) Close Format (□ = Space)
4) STOP

Examples: [M'code Del.] 0 □ [STOP]
[M'code Del.] 1 □ [STOP]

With the □ (Space, for close Format) the lamp in the key [M'code Del.] will light.

End of User Defined Format

The same key as for start [M'code Del.]

Examples:

[M'code Del.] 0 □ [STOP] Mergenthaler □ Linotype □ [M'code Del.]
[M'code Del.] 1 □ [STOP] LINOTRONIC □ FOR □ EUROPE [M'code Del.]

Breakdown of Methods

This example [M'code Del.] 2 is only a very simple Format, but when the long-hand and User format methods are examined side by side, it becomes obvious that there are large savings possible in keyboarding areas when the job instructions are repetitive.

[M'code Del.] 2 □ [STOP] LINOTYPE □ [STOP] ENGLAND □ [STOP]
FRANCE □ [STOP] BELGIUM □ [STOP] ITALY □ [STOP] SPAIN □ [STOP]
United □ States □ [M'code Del.]

Accessing User Defined Formats

1) [M'code Del.]
2) Index Number
3) Space

The contents of this User format will be displayed on the screen without any effect. The operator can check the memory. After pressing the [START] key the contents will be drawn out up to the end or the following break-point.

For access from one break-point to the next break-point, the operator should press the same key [START]

DELETE User Defined Format

1) [M'code Del.]
2) Index Number
3) Space
4) [STOP]
5) [M'code Del.]

This command will delete that particular User Format.

Deletion of all of the User Formats will be done by command

[M'code Del.] 251 □ [STOP]

Attention

All User Formats are stored on a 1 K RAM Board. Normally, if the machine is turned off, all contents (User Formats) would be lost.

For maintaining this information an additional number of accumulators are used which give you a storage time of about 7 days. In this case, if you switch off the Linotronic for more than 7 days permanentely 4 to 7 days at 8 hours/day for the full power capacity.

IEQ (Indices - Exponents - Quotients)

[□] Inferior (1st order)

All characters following this command will appear as a 1st Order Inferior. Type size proportional to the prime type size and the position are automatic.

With the same command a return will be made to the prime size.

The point size of the Inferior (1st order) will be 2/3 of the prime type size.

Example: Point size = 18 points
Inferior = 12 points
or Point size = 10 points
Inferior = 6½ points

▫ Inferior to Inferior (2nd order)

All characters following this command will appear as a 2nd Order Inferior to Inferior. Type size and position are automatic and relative to the prime size.
With the same command a return will be made to the prime size.

Example: Point size = 18 points
Inf. to Inf. = 8 points
or Point size = 10 points
Inf. to Inf. = 4 points

▫ Superior to Inferior (2nd order)

All characters following this command will appear as a 2nd Order Superior to Inferior. The size of the character and its position to the prime size characters is automatic.
With the same command a return will be made to the prime size.

Example: Point size = 18 points
Sup. to Inf. = 8 points
or Point size = 10 points
Sup. to Inf. = 4 points

□ Superior (1st order)

All characters following this command will appear as a 1st Order Superior in a type size automatically proportional to the prime type size.
With the same command a return will be made to the prime size.

Example: Point size = 18 points
Superior = 12 points
or Point size = 10 points
Superior = 6 1/2 points

▫ Superior to Superior (2nd order)

All characters following this command will appear as a 2nd Order Superior to Superior. Type size and position in relation to the prime size are automatic.
With the same command a return will be made to the prime size.

Example: Point size = 18points
Sup. to Sup.= 8 points
or Point size = 10 points
Sup. to Sup.= 4 points

▫ Inferior to Superior (2nd order)

All characters following this command will appear as a 2nd Order Inferior to Superior. The size of this character will automatically be proportional to the prime type size characters.
With the same command a return will be made to the prime size.

Example: Point size = 18 points
Inf. to Sup. = 8 points
or Point size = 10 points
Inf. to Sup. = 4 points

All Inferiors and Superiors will be cancelled by the code Elevate (End of Line).

└ With this key the program takes note of a special position whenever you press the key in a line.
With a second pressing of this key the Linotronic will return to the same position. This could be done in the same or in the next line.
For setting several times on the same position the same key must be used twice. The program will automatically find this position.